

# **TASK ORDER (TO) 47QFCA18D0009**

## **Modification PO07**

### **September 25, 2018**

## **Commercial Based Technology (CBT) Analysis**

**in support of:**

**Army Communications-Electronics Research, Development and Engineering  
Center (CERDEC) Intelligence and Information Warfare Directorate (I2WD)**



**Awarded to:  
CACI International Inc.**

**under the General Services Administration (GSA) One Acquisition Solution for Integrated  
Services (OASIS) Multiple Award (MA) Indefinite Delivery/Indefinite Quantity (IDIQ) –  
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**Issued by:  
The Federal Systems Integration and Management Center (FEDSIM)  
1800 F Street, NW (QF0B)  
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**Award Date: February 15, 2018**

**FEDSIM Project Number AR00922**

## **C.1 BACKGROUND**

The Intelligence and Information Warfare Directorate's (I2WD) Exploitation Analysis and Response Division, Prototyping and Forensics (P&F) Branch (I2WD P&F Branch), operating under CERDEC, serves as the Army's center for research and development of advanced cyber operations, electronic warfare, signals intelligence technologies, radar, and intelligence analysis, exploitation, and dissemination capabilities. This effort is to support military operations by providing prototyping and forensic intelligence.

The I2WD P&F Branch delivers emerging research and development technology to the Warfighter in response to Global Combatant Command requirements. One of the critical missions is the target characterization and replication support of threats being used against the Warfighter, which requires engineering, limited (threat-based) prototyping in the red-teaming sense for exploitation, test and validation on targets of interest. The threat-based prototyping serves as the basis for the development of systems, and so testing can be against accurate threats, resulting in systems being placed in-theater that can protect the lives of those performing the mission.

### **C.1.1 PURPOSE**

The purpose of this TO is to provide the Army CERDEC I2WD with engineering and technical support, and research and development to deliver technology to the Warfighter in response to Global Combatant Command requirements. This TO will provide prototyping and electronic forensics and exploitation support services by performing engineering, logistics and program management services, target device replication and prototyping.

### **C.1.2 AGENCY MISSION**

I2WD, operating under the Communications-Electronics Research, Development and Engineering Center (CERDEC), serves as the Army's center for R&D of advanced cyber operations, electronic warfare, signals intelligence technologies, radar, and intelligence analysis, exploitation, and dissemination capabilities. Today's Army faces new and varying threats from unconventional and asymmetric warfare. These new threats demand the need for capabilities that stop these actions and help Soldiers stay steps ahead of adversaries. CERDEC I2WD researches, develops and evaluates intelligence, surveillance and reconnaissance, electronic warfare and cyber technologies to provide effective, proactive situational awareness, and tracking, targeting and survivability solutions that transition into operational, relevant capabilities for the Soldier. From initial concept through fielding, I2WD spans the lifecycle of these systems and provides engineering and management support to Program Executive Offices.

## **C.2 SCOPE**

The scope of this TO will include all activities related to and in support of engineering and technical support services required to deliver technology to the Warfighter. Support will be provided in the Continental U.S. (CONUS), with the primary CONUS location being Aberdeen Proving Ground (APG), MD, and U.S. Government locations throughout CONUS, as well as

OCONUS locations around the globe, including hostile territories. Other than APG, MD, CONUS and OCONUS locations may change throughout the duration of this task order to support branch activities as mission and customer requests dictate.

### **C.3 CURRENT ENVIRONMENT**

The I2WD, Exploitation Analysis and Response Division, Prototyping and Forensics (P&F) Branch is comprised of three teams: Technical Forensics Exploitation (TFE), Global Threat Technology Team (GT3), and Replication and Prototyping Team (RPT). The TFE team conducts research and development, and characterization of electronics and firmware. GT3 performs predictive analysis, threat analysis, technology assessments, infrastructure studies, vulnerability assessments and red teaming. RPT conducts test and evaluation, and prototyping of concept from design to fabrication. The P&F Branch activities support approximately 50 customers across the Government annually. On average, a customer requested activity is completed within a one month timeframe.

This TO requires the contractor to have a thorough knowledge and understanding in the following areas (to include but not limited to):

- a. Command and Control Systems
  - 1. Consumer radio control devices (point to point communications)
  - 2. Integrated circuits for remote control and signaling applications
    - i Digital encoders/decoders
    - ii Dual Tone Multi-Frequency (DTMF) encoders/decoders
    - iii PIC microcontrollers
  - 3. Digital/analog circuit analysis
- b. Information technology (IT) systems development and administration and/or IT application and database development and administration. Knowledge of the Combined Information Data Network Exchange (CIDNE) database and/or CIDNE database management.
- c. Logistics and logistics management
- d. Intelligence acquiring and assessment techniques as it relates to CBTs.

The contractor shall be able to use all of, but not limited to, the following:

- |   |   |
|---|---|
| a. Three-dimensional plastic polymer printer (hobbyist and professional levels) | i. Computed Tomography (CT) x-ray scanner           |
| b. Waterjet cutting machine   | j. Sheet metal brake and press                      |
| c. Laser cutter   | k. Computer Numerical Control (CNC) milling machine |
| d. Powder coating booth   | l. Paint booth                                      |
| e. Forklift   | m. 20-ton crane                                     |

- |   |                                     |
|---|-------------------------------------|
| f. Timesaver finishing machine                                  | n. PCB milling machine              |
| g. Printed Circuit Board (PCB) multilayer press                 | o. Automatic pick and place machine |
| h. General machine shop equipment (band saw, drill press, etc.) | p. General hand and power tools     |

#### **C.4 OBJECTIVE**

The objective of this TO is to provide the I2WD Exploitation Analysis and Response Division, P&F Branch with electronics forensics and exploitation support services to enable I2WD quick reactionary responses to customer organizations in response to current and emerging threats.

#### **C.5 TASKS**

The contractor shall perform the following tasks:

Task 1 – Provide Program Management

Task 2 – Provide Technical Intelligence Support

##### **C.5.1 TASK 1 – PROVIDE PROJECT MANAGEMENT**

The contractor shall provide project management support under this TO. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors, to satisfy the requirements identified in this Performance Work Statement (PWS). The contractor shall identify a Project Manager (PM) by name who shall provide management, direction, administration, quality assurance, and leadership of the execution of this TO.

The contractor shall facilitate Government and contractor communications and all activities necessary to ensure the accomplishment of timely and effective support, performed in accordance with the requirements contained in this contract. These activities may include: scheduling, planning, and attendance at meetings, trips to vendor locations and participation in program reviews. The contractor shall assist the Government in the preparation of project plans and schedules, requirements, and test plans. The contractor shall provide solicited and unsolicited recommendations and status updates to ensure the Government program manager is kept current on all delays, deviations, and potential problems that could impact the outcome of the program.

The contractor shall notify the FEDSIM contracting officer (CO), contracting officer's representative (COR), and I2WD technical point of contact (TPOC) in writing of any technical, financial, personnel, or general managerial problems encountered throughout the contract PoP.

**C.5.1.1 SUBTASK 1.1 – ACCOUNTING FOR CONTRACTOR MANPOWER REPORTING**

Army Contractor Manpower Reporting System requirements apply to this effort and all manpower requirements shall be input into the System as required.

To fulfill this Army reporting requirement, the following information for I2WD is provided:

I2WD Unit Identification Code (UIC): W4G8AA

I2WD Federal Service Code (FSC): AJ44.

I2WD Command Code: 6N.

I2WD Fiscal Funding Station Code: S28043.

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract for the CERDEC I2WD Prototyping and Forensics Branch via a secure data collection site. The contractor shall completely fill in all required data fields using the following web address: <http://www.ecmra.mil/>. Then click on "Department of the Army CMRA" or the icon of the DoD organization that is receiving or benefitting from the contracted services.

Reporting inputs will be for the labor executed during the period of performance during each Government Fiscal Year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the support desk at: <http://www.ecmra.mil/> by clicking on "Send an email" which is located under the Help Resources ribbon on the right side of the login page of the applicable Service/Component's Contractor Manpower Reporting website.

Contractors may use Extensible Markup Language (XML) data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the website. The specific formats for the XML direct transfer may be downloaded from the web.

**C.5.1.2 SUBTASK 1.2 – COORDINATE A PROJECT KICK-OFF MEETING**

The contractor shall schedule, coordinate, and host a Project Kick-Off Meeting at the location approved by the Government (**Section F, Deliverable 02**). The meeting will provide an introduction between the contractor personnel and Government personnel who will be involved with the TO. The meeting will provide the opportunity to discuss technical, management, and security issues, and travel authorization and reporting procedures. At a minimum, the attendees shall include Key contractor Personnel, representatives from I2WD, other relevant Government personnel, and the FEDSIM COR.

At least three days prior to the Kick-Off Meeting, the contractor shall provide a Kick-Off Meeting Agenda (**Section F, Deliverable 01**) (**Section J, Attachment Z**) for review and approval by the FEDSIM COR and the I2WD TPOC prior to finalizing.

The Government will provide the contractor with the number of Government participants for the Kick-Off Meeting and the contractor shall provide sufficient copies of the presentation for all present.

The contractor shall draft and provide a Kick-Off Meeting Minutes Report five workdays after the Kick-Off Meeting (**Section F, Deliverable 03**) that documents the Kick-Off Meeting discussion and captures any action items.

#### **C.5.1.3 SUBTASK 1.3 – PREPARE A MONTHLY STATUS REPORT (MSR)**

The contractor shall develop and provide an MSR by the 20th calendar day of the following month (**Section J, Attachment D**) (**Section F, Deliverable 04**). The MSR shall include the following:

- a. Activities during reporting period, by task (include on-going activities, new activities, and activities completed, and progress to date on all above mentioned activities). Each section shall start with a brief description of the task
- b. Problems and corrective actions taken, also include issues or concerns and proposed resolutions to address them
- c. Personnel gains, losses, and status (security clearance, etc.)
- d. Government actions required
- e. Schedule (show major tasks, milestones, and deliverables; planned and actual start and completion dates for each)
- f. Summary of trips taken, conferences attended, etc. (attach Trip Reports to the MSR for reporting period)
- g. Number of personnel performing at each place of performance during the month and explanation for changes from previous month
- h. Purchases made during the month regardless of cost (show date of purchase, vendor, item name, item number, quantity, cost, status, and purchase request number or identifier).
- i. Accumulated invoiced cost for each CLIN up to the previous month
- j. Projected cost of each CLIN for the current month.

The MSR shall be in an agreed upon format with the I2WD TPOC and FEDSIM COR. Any modifications, enhancements, or deviations from the provided MSR templates shall be approved, in writing, by both the I2WD TPOC and FEDSIM COR prior to submission.

#### **C.5.1.4 SUBTASK 1.4 – CONVENE TECHNICAL STATUS MEETINGS**

The contractor PM shall convene a quarterly Technical Status Meeting with the I2WD TPOC, FEDSIM COR, and other Government stakeholders (**Section F, Deliverable 05**). The purpose of this meeting is to ensure all stakeholders are informed of the quarterly activities and MSR, provide opportunities to identify other activities and establish priorities, and coordinate resolution of identified problems or opportunities. The contractor PM shall provide minutes of these meetings, including attendance, issues discussed, decisions made, and action items

assigned, to the FEDSIM COR and I2WD TPOC within five workdays following the meeting (**Section F, Deliverable 06**).

#### **C.5.1.5 SUBTASK 1.5 – PREPARE A PROJECT MANAGEMENT PLAN (PMP)**

The contractor shall document all support requirements in a PMP. The contractor shall provide the Government with a draft PMP (**Section F, Deliverable 07**) on which the Government will make comments. The final PMP (**Section F, Deliverable 08**) shall incorporate the Government's comments.

The PMP shall:

- a. Describe the proposed management approach.
- b. Contain detailed Standard Operating Procedures (SOPs) for all tasks.
- c. Include milestones, tasks, and subtasks required in this TO.
- d. Provide for an overall Work Breakdown Structure (WBS) with a minimum of three levels and associated responsibilities and partnerships between Government organizations.
- e. Describe in detail the contractor's approach to risk management under this TO.
- f. Describe in detail the contractor's approach to communications, including processes, procedures, communication approach, and other rules of engagement between the contractor and the Government.
- g. Include the contractor's Baseline QCP.

#### **C.5.1.6 SUBTASK 1.6 – PREPARE TRIP REPORTS**

The Government will identify the need for a Trip Report when the request for travel is submitted (**Section F, Deliverable 09**). The contractor shall submit Trip Reports, as requested by the Government, five working days after completion of a trip for all long-distance travel. The Trip Report shall include the following information:

- a. Purpose
- b. Mission Areas
- c. Trip Location
- d. Traveler
- e. Key Personnel Contacted
- f. Itinerary
- g. Discussion
- h. After Action Items
- i. Dates of travel

The contractor shall keep a historical summary of all long-distance travel to include, at a minimum, the name of the employee, location of travel, duration of trip, and Point of Contact (POC) at travel location, and trip cost. At a minimum, trip reports shall be prepared with the information provided in **Section J, Attachment Y**.

#### **C.5.1.7 SUBTASK 1.7 – QUALITY CONTROL PLAN (QCP)**

The contractor shall submit a draft QCP (**Section F, Deliverable 10**) at the Project Kick-off meeting, and then provide a final baseline QCP as required in Section F (**Section F, Deliverable 11**). The contractor shall periodically update the QCP, as required in Section F (**Section F, Deliverable 12**), as changes in program processes are identified.

Within the QCP, the contractor shall identify its approach for providing quality control in meeting the requirements of the TO. The QCP shall describe how the processes integrate with the Government's requirements.

The QCP shall contain at a minimum the following:

- a. Quality control methodology for accomplishing TO performance expectations and objectives.
- b. Validated processes and procedures that provide high quality performance for each Task Area.
- c. Performance Monitoring Methods.
- d. Performance Measures.
- e. Approach to ensure that cost, performance, and schedule comply with task planning.
- f. Methodology for continuous improvement of processes and procedures, including the identification of service metrics that can be tracked in the TO.
- g. Government Roles.
- h. Contractor Roles.

#### **C.5.1.8 SUBTASK 1.8 – TRANSITION-OUT**

The contractor shall provide transition-out support when required by the Government. The transition-out plan shall facilitate the accomplishment of a seamless transition from the incumbent to incoming contractor and/or Government personnel at the expiration of the contract. The contractor shall provide a draft transition-out plan (**Section F.3, Deliverable 13**) no later than (NLT) 150 calendar days prior to expiration of the task order and the offeror shall provide a final transition-out plan (**Section F.3, Deliverable 14**) NLT 120 calendar days prior to expiration of the task order.

In the transition-out plan, the contractor shall identify how it will coordinate with the incoming contractor and/or Government personnel to transfer knowledge regarding the following:

- a. Project management processes
- b. Points of contact
- c. Location of technical and project management documentation
- d. Status of ongoing technical initiatives
- e. Appropriate contractor to contractor coordination to ensure a seamless transition
- f. Transition of key personnel
- g. Schedules and milestones
- h. Actions required of the Government



The contractor shall also establish and maintain effective communication with the incoming contractor and/or Government personnel for the period of the transition via weekly status meetings or as often as necessary to ensure a seamless transition-out.

The contractor shall implement its Transition-Out Plan in accordance with the Government-approved Transition-Out Plan and NLT 120 calendar days prior to expiration of the TO. All facilities, equipment, and material utilized by the contractor personnel during performance of the contract shall remain accessible to the contractor personnel during the transition-out period pursuant to the applicable security in-processing and out-processing guidelines.

#### **C.5.1.9 SUBTASK 1.9 – BRIEFINGS / DOCUMENTS / GRAPHICS**

At the request of the Government, the contractor shall prepare briefings and documents and assist the Government with the preparation of briefings (**Section F.3, Deliverable 15**) and documents. The contractor shall produce professional documentation and briefing packages. The contractor shall incorporate high quality photographs, animations, and video clips into documentation and briefings. All documentation and briefings provided to the Government shall be free from major formatting and grammatical errors and only require minor revisions on the part of the Government.

The contractor shall support the Government in the development of technology documents (briefings and reports) for further use in formal presentations, high level briefings, and other technical/program exchanges. The documents shall provide detailed technical characterization and operational parameters derived from tests and evaluations on electronic and / or mechanical systems of interest. Reports shall follow existing and future templates and standards developed by the I2WD P&F Labs. The contractor shall document all activities for inclusion into status reports or future inclusion in engineering and technical reports. Briefing materials shall be prepared using the Research, Development and Engineering Command (RDECOM) briefing templates; which will be provided. Briefings shall include but are not limited to technical evaluations, capability assessments, and current market research.

#### **C.5.1.10 SUBTASK 1.10 – PROVIDE PROJECT ANALYSIS AND PROCUREMENT SUPPORT**

Project Analysis and Procurement support is critical to the effective and efficient operations of I2WD customer projects and fulfillment of TO requirements. Project analysis and procurement support includes project analysis activities within I2WD, and among other organizations for day-to-day operations, financial and budget analysis, travel preparation, and procurement.

The contractor shall provide the following Project Analysis support:

- a. Assist in development and technical editor review of branch deliverables and documents.
- b. Perform financial and budget analysis, prepare cost estimates, track expenditures, coordinate actions and information with other government organizations and the I2WD budget/financial planning team, and develop briefings and graphic representations of information (**Section F.3, Deliverable 25**).

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SECTION C – PERFORMANCE WORK STATEMENT

- c. Monitor and assist with shipping, receiving, and inventory of branch assets to include purchases, and products.
- d. Support SharePoint site manager activities, maintain access lists and branch content to ensure information is current and organized in accordance with content management guidance.
- e. Maintain workflow and correspondence with internal and external entities, and create and recommend improvements for recordkeeping systems and forms control. Prepare, process, and track correspondence, and collect and report data.
- f. Assist in travel preparation for CONUS and OCONUS travel and prepare travel packets, conference packets, conference registrations, and facilitate and ensure clearances are passed to destination location.
- g. Implement and assist with executing office operations support systems (e.g., Defense Travel System (DTS)), processes and procedures, and monitor projects.
- h. Schedule and coordinate meetings, visits, and events, prepare supporting briefs and reports; coordinate the protocol and administrative requirements of visits to I2WD and assist with executing the RDECOM visit protocol; prepare and distribute meeting agendas and meeting minutes /notes, and track action items; reserve meeting space and facilitate audio visual and telecommunication support for scheduled meetings.
- i. Track ancillary training requirements.
- j. Produce and distribute the battle rhythms, activity reports, and staff meeting briefs.
- k. Maintain and update overall office schedules, calendars, and branch contact list. Monitor and report personnel accountability.
- l. Assist with in-processing new branch employees and out-processing departing branch employees.
- m. Update and maintain I2WD organization structure and current POCs documentation to ensure the information remains current.
- n. Administer and monitor the Automated Time, Attendance, and Production System (ATAAPS).

#### **C.5.1.10.1 SUBTASK 1.10.1 – PROVIDE PROCUREMENT SUPPORT**

The contractor shall provide an onsite procurement specialist. The contractor shall procure software, hardware, materials and equipment as necessary to support the tasks in this PWS, in an efficient and timely manner. The Government will identify procurements as normal or urgent. Purchase Orders (POs) for normal procurements shall be placed with the appropriate vendors within 10 working days of a written request from the Government. POs for urgent procurements shall be placed within three working days of a written request from the Government.

The contractor shall provide the following Procurement Support:

- a. Prepare, place, track, and monitor budgets and requisitions, and purchase orders to ensure timely execution.
- b. Analyze requirements, obtain vendor quotes, and develop cost estimates.
- c. Assist in maintaining budget process documents.
- d. Document processes and contact information of external parties to include timelines.
- e. Develop and maintain a tracking sheet or database that contains easy to retrieve budget information, point of contact information, associated project information, and tracking numbers and information (**Section F.3, Deliverable 26**).
- f. Assist in gathering and developing background data, information and documentation that will be used for reference and evidence to support required program budgets.
- g. Coordinate and collaborate with the I2WD budget/financial planning team for tracking, verifying, and providing updates.

#### **C.5.2 TASK 2 – PROVIDE TECHNICAL INTELLIGENCE SUPPORT**

The contractor shall provide Technical Intelligence (TI) support at the tactical, operational and strategic levels. Joint Publication (JP) 3-42 and the concepts of operation (CONOPS) for DoD weapons technical intelligence (WTI) defines the TI process as agile and adaptable based on information priorities, tactical situation, type of mission, and/or required outputs. The following subtasks provide the requirements for critical needs in the tactical, operational, and strategic environments.

##### **C.5.2.1 SUBTASK 2.1 – PROVIDE TECHNICAL INTELLIGENCE SUPPORT – TACTICAL LEVEL**

(U//FOUO) The contractor shall provide pre-deployment training and knowledge exchange to stateside units, other Government agencies, explosive ordnance disposal (EOD) units, and 20th Support Command (SUPCOM) during CONUS based exercises such as field training exercises (FTX), Validation Exercises (VALEX), and other subject matter expert (SME) knowledge exchange events. The contractor shall prepare briefing materials and a program of instruction (**Section F.3, Deliverable 16**) for stateside units so they are adequately trained prior to their deployment to theater. The contractor shall provide instruction, replicated devices, and realistic exercise support that demonstrates adversary tactics, techniques and procedures (TTPs) to assist pre-deployed personnel with target familiarization, particularly with respect to their employment

of target devices. The contractor shall also provide replicated versions of target devices and shall train students on adversary TTPs to include emplacement TTPs, photo TTPs, and antenna TTPs. The contractor shall provide students with tactically relevant information, such as data derived from Priority Intelligence Reports (PIRs). It is estimated that the contractor shall plan on supporting five separate exercises with 50 students each. The duration of each exercise shall be two weeks.

#### **C.5.2.2 SUBTASK 2.2 – PROVIDE TECHNICAL INTELLIGENCE SUPPORT – OPERATIONAL LEVEL**

(U//FOUO) The contractor shall provide on-site technical forensics support to forward exploitation labs. The contractor shall conduct analyses and assist in the collection and dissemination of information to U.S. and coalition forces (on a need to know basis) concerning target device TTPs, technology, and safe handling procedures. The contractor shall also respond to PIR requests from all users. The contractor personnel shall support technical intelligence (TECHINT), media exploitation (MEDEX), cell phone exploitation (CELLEX), electronic exploitation (ELEX), and other unique exploitation missions.

(U//FOUO) The contractor shall provide on-site analytical support of CBT devices at exploitation labs:

- a) Electronic Analysis – the contractor shall conduct electronic analyses of target devices, including functional analyses of the target devices, understand and describe how the target functions from an electronic perspective – basic signaling characteristics; voltage levels; electrical connections; electrical modifications to commercial-off-the-shelf (COTS) hardware; logic states; operating frequencies; component configuration identification; operating profiles/modes; operation in noisy electromagnetic environments; susceptibility; Blue Force ability to detect target based on electronic properties.
- b) Mechanical Analysis – the contractor shall conduct mechanical analyses of target devices, including functional analyses of the target device (i.e., understand and describe how the target functions from a mechanical perspective – properties of the materials used to make the target; mechanical connections; mechanical modifications to COTS hardware; properties of the enclosure and the target's size, weight and power; operating temperatures and operation under various climatic conditions, noise and vibration; operating profiles/modes; Blue Force ability to detect target based on mechanical properties)
- c) Technical Intelligence Analysis - the contractor shall conduct technical intelligence analyses to discern and document where and how CBT are being used by adversaries across all combatant commands. The contractor shall also keep abreast on the latest CBT that could possibly be used for nefarious purposes to include emerging technologies.
- d) Indications and Warnings (I&W) – the contractor shall provide I&W and trend analysis data to personnel collocated at their facilities, other in-country labs, other OCONUS labs, and CONUS strategic and national labs concerning new target devices and TTPs. The contractor shall implement an effective dissemination plan to ensure that I&W data is furnished to CONUS and OCONUS users across all echelons, services, other

Government agencies, and foreign partner nations (as required) who require access to this data in accordance with (IAW) appropriate Security Classification Guidance (SCGs).

### **C.5.2.3 SUBTASK 2.3 – PROVIDE TECHNICAL INTELLIGENCE SUPPORT – STRATEGIC LEVEL**

The contractor shall provide engineering, logistics and project management personnel to support electronic device analysis in order to conduct detailed assessments, tests, and evaluations of the electronic functions of target devices at the I2WD facility at APG MD. These personnel shall conduct analyses that are documented in formal technical reports (**Section F.3, Deliverable 17**) for dissemination to users, research and development activities, other Government Agencies (OGAs) and the test community.

(U//FOUO) The analyses performed by the contractor shall fully describe how a target device functions through the use of measurement and analytical techniques, as defined in the WTI Handbook for Level IV (national) characterization and the I2WD TFE Characterization Lab SOPs. The efforts to be conducted by the contractor shall include:

- a) Electronics reverse engineering and analysis
- b) Radio Frequency (RF) signals reverse engineering and analysis
- c) Measurement and Signatures Intelligence (MASINT) collection and analysis
- d) Electro-optical (EO) and infrared (IR) collection and analysis
- e) Firmware extraction, reverse engineering and analysis
- f) Antenna performance characteristics
- g) Technology vulnerability assessments
- h) Other signatures as requested, to include anechoic chamber data collections

The contractor shall also support administrative activities such as database management, inventory control, technical writing / report review, shipping and receiving, and lab maintenance duties.

### **C.5.2.4 SUBTASK 2.4 – TARGET REPLICATION AND GENERAL ELECTRONICS PROTOTYPING**

This task requires engineering, logistics and project management skill sets in support of Target Fabrication and General Electronics Prototyping.

#### **C.5.2.4.1 SUBTASK 2.4.1 – TARGET REPLICATION**

(U//FOUO) The contractor shall conduct target replication, which consists of electrical assembly and sub-assembly design capture and fabrication, firmware / software development for device operation, fabrication and population of printed circuit boards, and fabrication of enclosures, using similar materials to those employed in the target to the maximum extent possible. The contractor shall also replicate mechanical targets that may consist of COTS items, modified COTS items, or completely new “hobby shop” designs. The objective of this effort shall be for

the contractor to design and fabricate one or more copies of the targets that are functionally indistinguishable from the target itself. The contractor shall document all work performed to reverse engineer and fabricate a specific target in a technical report (**Section F.3, Deliverable 17**). The contractor shall also document the specific steps necessary to operate a replicated device, complete with descriptions of device operating stimuli and pictorial descriptions of the same. The contractor shall prepare and edit these technical reports to comply with existing I2WD device replication report formats.

The contractor shall also support administrative activities such as database management, inventory control, technical writing / report review, shipping and receiving duties.

#### **C.5.2.4.2 SUBTASK 2.4.2 – GENERAL ELECTRONICS PROTOTYPING**

General electronics prototyping shall consist of the electrical and mechanical design capture, simulation, analysis, prototyping and documenting of an electronic solution in response to internal laboratory or external customer request. The contractor shall support such efforts through conceptual system and circuit design, technology assessment and down-selection, bread-board verification, schematic capture, printed wiring board layout (if applicable), mechanical design, capture and fabrication, and system integration with verification and validation. The contractor shall document all steps of the design process, as well as compile a record of all test and measurement activities therein. The contractor shall document results in a finalized technical report (**Section F.3, Deliverable 17**), denoting construction steps and system validation tests with pass/fail criteria. The contractor shall compose a separate operation manual to instruct end users and customers in the proper operation and troubleshooting of the prototype device.

The contractor shall support general electronics prototyping-mechanical fabrication efforts through mechanical design, capture and fabrication, and system integration with verification and validation. The contractor shall utilize proper personal protective equipment (PPE) as required.

#### **C.5.2.5 SUBTASK 2.5 – SOFTWARE ARCHITECTURE AND DEVELOPMENT**

This task requires software architecture engineering and application engineering skill sets. The contractor shall conduct computer software design and architecture projects. Such projects automate and complement the full suite of test and measurement activities being performed or developed. The contractor shall deliver scripted, documented, and / or fully compiled operational programs (**Section F.3, Deliverable 18**) based on the product system and its capabilities. The contractor will be required to support exploitation and modeling and simulation tool development.

#### **C.5.2.6 SUBTASK 2.6 – ELECTRONICS ENGINEERING SUPPORT**

The contractor shall support the Government with expedient electronics engineering activities for conducting system, subsystem and component level characterization, exploitation and analysis of CBT and other electronic systems. This task requires the contractor to remain current on global commercial based technology devices and TTPs, and have familiarity and experience with EOD storyboards and reporting, universal profiling and schema.

The contractor shall provide the following Electronics Engineering Support:

- a. Reverse-engineer electronic circuit systems at various maturation levels
  1. Report and brief critical finds to both military and Department of Defense (DoD) civilian leadership
  2. Analyze electronic characteristics of commercial based technologies
  3. Create schematic reconstruction of circuits.
- b. Determine electronic/electrical characteristics of CBT to include operating frequencies and RF power levels.
- c. Analyze electronic components (to include but not limited to switches, integrated circuits, and power supplies).
- d. Enable the development of countermeasures for electronic devices/signals.
- e. Provide information and assist in profiling and signature analysis.
- f. Produce storyboards and technical reports on captured data.
- g. Maintain and document the chain of custody of items and data.
- h. Train replacement personnel on SOPs.
- i. Identify and notify lab management of irregularities and any unusual features on electronic devices in order to assess design, function, and performance capabilities.
- j. Adhere to lab processes and work flow for exploitation efforts.

#### **C.5.2.7 SUBTASK 2.7 – TECHNOLOGY ANALYSIS SUPPORT**

The contractor shall support the Government with technical intelligence activities to evaluate and inform system engineering and development efforts. These tasks include the following:

- a. Identification, procurement, and integration of relevant CBT and sub-systems or components for exploitation and test and evaluation efforts.
- b. Support to test events on site to execute use of CBT, development and use in relevant scenarios, and maintenance of CBT items.
- c. Red teaming activities for the use of CBT on the battlefield to identify new scenarios and TTPs as well as possible vulnerabilities of other U.S. capabilities.
- d. Predictive analysis of emerging CBT, possible impacts on the battlefield, and recommendations for follow-on actions.
- e. All source analysis of current CBT used on the battlefield, enemy aspirations for improved TTPs using CBT, and presentation of findings for internal I2WD programs as

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well as external customers.

- f. Conduct vulnerability site assessments and generation of associated findings documentation for CONUS and OCONUS locations that will inform critical facilities of possible vulnerabilities due to use of CBT.
- g. Engage with foreign partners (on a need to know basis) in order to build a more informed picture of CBT use on the battlefield.